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WI BROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts. VK2WI: Sundays, 1100 hours EST, 7148 Kc. and 2000 hours EST 50 and 154 Mc. No frequency checks available from VK2WI. Intrastate working frequency, 7125 Kc.

VR3WI: Sundays, 1136 hours EST, simultan-county on 3573 and 7146 Kc., 51.016 and 146.25 Mc. Intrastate working frequency 7135 Kc. Individual frequency checks of Amateur Stations given when VKSWI is on the air.

VKWI: Sundays, 0900 hours EST, simultan-courly on 3860 and 14342 Kc. 3860 Kc. channel is used from 6015 hours to 1015 hours each Sunday for the W.I.A. Country hook-up. No frequency checks available.

VK5WI: Sundays, 1000 hours SAST, on 7146 Kc. Frequency checks are given by VK5MD and VK5WI by arrangements on all bands to 50 Mc. VK6WI: Sundays, 6830 hours WAST, on 7146 Kc. No frequency checks available.

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EDITORIAL

FEDERAL CONVENTIONS

When a man's stomach is full and his appetite is satisfied, like other animals, he is usually content to drowse and ignore the world in general. On the other hand when the gnawing pangs of hunger bite at his vitals, he becomes ferocious and vociferous.

Judging by the growing clamour for more privileges and the removal of irksome restrictions, members of the Institute are awakening from the lethargy which has been apparent since 1953. There is a general awareness of the necessity for united action on the part of Divisions.

How can united action be best achieved?

The answer is obvious, "Federal Council must meet and thrash out a course of action."

In 1953 at the Twenty-third Convention it was decided that owing to increased costs and the lack of con-tentious items—following intensive and successful post-war campaign-Annual Conventions were an necessary financial drain on the Div-Council therefore resolved that the next Convention would not be held until business of sufficient importance to warrant the expense arose. In the meantime, Divisions

were morally bound to create a fund and set aside a reasonable amount each year in readiness for this event whenever it occurred.

Since 1953 a new Division-VK9 (Papua and New Guinea)-has been (Papua and New Guinea)—nas peen formed. Problems have arisen concerning: Constitution, Contests, Band Allocation, Mobile, Novice and TV Licenses. Hence it now appears that Council must meet as soon as possible.

While much of the business of the Institute can be, and is, conducted by mail. there is no known substitute for personal contact and round table conferences when matters affecting high policy are involved. Furthermore, such personal contact is essential to maintain proper liaison between Divisions and avert the

calamitous drift from "Federation." "United we stand-divided we

How can YOU expect Federal Executive to carry out your wishes unless you issue instructions through your Federal Councillor. your receral connents.

Keep yourself informed of Federal affairs, demand action how through the right channels. Don't waste energy on individual campaigns, boost and use the Institute's strength

to the full.

FEDERAL EXECUTIVE.

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Experiments with 144 Mc. Underground

BY P. J. HEALY,* VK2APQ

O^N Sunday, 4th December, 1955, a party consisting of members of V.h.f. Group of the N.S.W. Division of the Wireless Institute of Australia and the Sydney University Speleological Society, carried out some very interesting experiments on 144 Mc. in the Jenolan Caves area of N.S.W.

The aim was to ascertain if communication was possible between different sections of the caves using 144 Mc. Walkie-Talkie equipment. It was with some doubt as to what measure of success would be achieved, that the trip to Jenoina, Cayes was made by Perc. The second of the second o as the following details will indicate.

The equipment used consisted of four walkie-talkie units, including one crystal-controlled and three modulated oscillators, all with super-regenerative receivers, each with an input to the final stage of approx. 0.4 watt. The mobile units were two crystal-controlled trans-mitters running 6 watts input, receivers, super-regen. superhet., and a Goon set. Antennae were quarter wave whips on the walkie-talkies, a three element beam and a gallows on the mobile units.

The first experiment was carried out in the Glass Cave, which is not open to the public. This cave is located about half a mile direct air line to the north of the Caves House, "accessable" by track requiring a two-mile trip over the ridge and down a 700 foot drop with numerous hairpin bends.

PLAN OF AREA Fig. 1.

Entrance into the Glass Cave is made Entrance into the Glass Cave is made through a very narrow opening located through a very narrow opening located agreement of the position of the position of the base of a limestone outcrop. Fig. 1 gives an indication of the position of the cars operating as base station "A" located on the river flat in

• 69 Taylor Street, Bankstown, N.S.W.

the floor of the valley to the cave mouth "B", a distance in a direct line of approx. one-third of a mile. The track from the car to cave was through a gorge along the river bed, then the 150 foot ascent.

Fig. 2 is a scale plan of the interior of this cave, and indicates the relative positions of "C" "D" "E" and "F" from which tests were made.

Three parties, equipped with walkie-talkies, entered the cave and operated from positions "C" "D" and "E". The plan was to endeavour to relay informa-tion back to "A" via the fourth walkie-talkie located at "B".



An interior view of Cavern "C" in the Glass Cave, The ladder descends down 25 feet. Refer Fig. 2.

It will be noted from Fig. 2 that the entrance to the cavern "C", which is 50 feet high, is made through a very narrow chimney and a drop of 25 feet to the floor. While to "D" required a 20 foot climb through a narrow neck to a chamber 15 feet high, and to "E" through a "Flattener" about one foot high to a chamber 15 feet high.

The first test made was between "B" and "C", the path between "A" and and "C", the path between "A" and "B" had been previously checked by all parties. Signal reports were exchanged at readability 5 strength 7. When "B" relayed to "A" that contact had been established with the first link inside the established with the first link inside the cave at "C", signal report was R5 and S6. It was then suggested that "A" and "C" listen for each other, assisted by "B" as monitor, and to our amazement contact was made with signal ment contact was made with signal re-ports of R5 and S7 to S8 each way, both "A" and "C" reporting they were copy-ing each other better than they were copying "B". As "B" was then super-fluous in the link, it was decided that would make checks on signals away from the mouth of the cave, and found that signals from "C" were stronger at the foot of the slope than at the cave mouth, but as the other stations inside were in contact with each other, no check was made with "C Signal reports between locations "C" "D" "E" and "F" were always R5 and \$8, proving that 100% reliable communications can be maintained intra Tests made between "A" and "D" were R5 and S7, while from "A" to "F" signals were barely readable, apparently due to the narrow neck where "F" was located.

No checks were made between "A" and "E" although the signals from "A" were heard at "E".

The distance from the car station at "A" to the limestone bluff "X" (see Fig. 1) was about 1,000 feet and a further 700 feet of limestone between this point and the interior of the cave. Although no cross bearings were made it appears that signals were received through the limestone rather than by

ducting effects through the cave entrance, which the sketch (Fig. 1) shows was very well shielded in direc-tion of the base station. Peaking the signals by use of the three element beam gave a definite indication that they were being received in a direct line and not by reflection from the surrounding cliffs.

The second experiment was made from the Orient Cave, which is one of the tourist caves, and is very much different in layout to the Glass Cave. The en-trance to the Orient Cave is

trance to the Orient Cave is through a 380 foot tunnel. The ladder 8 feet high by 3 feet 6 foot to be a small cavern "9". Then through a companionway 7 feet high by 2 feet 6 inches wide, being covered on top and both sides with a 2 inch wire mesh for a distance of twelve feet opening into the main cavern "8", which is 50 feet high.

The mobile station was located in a car "A" (see Fig. 3) about 400 feet below the top of the mountain and 50 feet from the start of the limestone slope, which rose at an angle of 60 degrees to the horizontal. All stations were within 10 feet of the same horizontal datum

The portable unit was the crystalcontrolled walkie-talkie with a quarter wave whip antenna and approx. 0.4 watt input to the final. Checks were

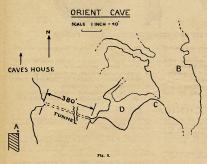


made in the tunnel where signals averaged R5 and S5. From the small cav-R5 and S7, and upon entering the wire mesh covered companionway, signals were completely inaudible. However, in the main cavern clear of wire mesh and guard rails, signals were exchanged at R5 and S8. The distance between "A" and "B" in a direct line was 580 feet, while the walking distance from the entrance of the tunnel to location "B" was 660 feet.

Directional checks made from the car during the transmission periods from inside the cave showed a shift of up to 50 degrees away from the mouth of the tunnel when checks were being made from cavern "D", and a change of 20 degrees back towards the tunnel entrance when transmissions were made determining the refraction of signals through the limestone and more accur-ately determining the path of signals.

It would appear that very good use could be made with v.h.f. links in cave search and rescue work, the exploration of cave systems, also the exact pin-pointing of certain areas inside the caves by using mobile units with directional antennae located at various positions outside. These points will be investigated on the next expedition.

Sidelights of the trip were the night spent by VK2HL, VK2NP, VK2VL, and VK2ATO when the deep freeze set in and it snowed, while they were pre-pared for only a summer's night; a trip through a light snow storm by VK2XX, VK2APQ, Cec. Cronan and Darrel Price when the contact with VK2HL was possibly the first mobile contact on 144 Mc.



from the main cavern "B". It was noted that strongest signals were received by both stations when the portable unit operated from "B" and "D". An important point in these checks was that in the large cavern "B" signals were very much stronger than in any portion of the narrow tunnel despite the 100% increase in distance.

The limestone outside the marked section of Fig. 3 is solid and uniform. therefore it seems certain that signals were received over the direct path rather than by ducting through the

As it was getting late in the day, and it was about 120 miles' trip back to Sydney, further tests could not be made. However, a further test is already being planned when cross bearings will be taken, together with checks on top of the mountain immediately above the caverns, with the view of made in N.S.W. during a snow storm; the inability of VK2APQ to negotiate the chimney in the entrance to the Glass Cave, reason being the chimney was too small; the reconnoirreing carried out by VK2ATO and VK2ZAR using their walkie-talkies which enabled the driv-ers of the cars to make the trip down the 700 feet drop and back up again. I wish to acknowledge with thanks

and appreciation the co-operation of Brian O'Brien,† B.Sc., President of the Sydney University Speleological Society. in arranging for these tests to be made, and for the assistance in the preparation of notes and maps for this article. Also to Mr. Best, the Director of the N.S.W. Government Tourist Bureau, and Mr. Finney, Superintendent of the Caves, for the help and co-operation they have rendered in making these tests possible.

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"E" 20 -39 "G" 75 -175 39-75 "H" 150 -300 APPLICATIONS

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This crystal microphone requires to be terminated with a high value parallel load of the order of 1 to 5 megohms for best results.

The mass of the moving parts is small, hence the sensitivity is high and a high efficiency is achieved. Light gauge solder lugs are provided so that excessive heat in soldering will not be transmitted to the crystal element.

Output Level

When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration. One of the connecting lugs is directly connected to the

case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

All crystal elements are mounted on high grade suspen-sion pillars, being fixed thereto with a good quality cement, thus ensuring stability and long life.

Case 1½" diameter (rear), ¾" thickness, 1-13/16" overall diameter (front) with filter fitted. Frequency Response = 60-6,500 c.p.s.



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Transformer Theory and Practice

PART TWO

At this point we must consider an-other aspect of modulation transformers and that is the provision of, and reason for, the air gap in the iron circuit.

If you can remember the fundamental theory dealing with direct current solenoids, you will recall that the magnetic flux, produced in a core, is a functhrough the turns. Forget for a moment that our modulation transformer is a transformer, and look on it as a direct current solenoid wherein the turns are the secondary turns of the transformer and the current flowing is the direct current supplied to the transmitter. We thus have all the elements of a direct trus have an the elements of a direct current solenoid, i.e., turns, current flowing and an iron core. Under these conditions the total flux generated in the core is only limited by the value of ampere turns, and the magnetic reluct-ance of the core. In a core which is built up of overlapping laminations (which is the normal way to build a twinch is the normal way to build a transformer) the magnetic reluctance is very low and so the total magnetic flux in the iron circuit is high. If we intro-duce a definite air gap in the magnetic circuit, the reluctance of the magnetic circuit is increased. The actual increase circuit is increased. The actual increase depends on the length of the air gap. We thus have a means of controlling the initial flux density in the core due to the magnetising effect of the steady

The saturation value of transformer steels is usually of the order of 20,000 lines per square centimetre. Our modulation transformer must be so designed that at maximum signal input the sat-uration value of the steel is not ex-

direct current.

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"B" is steady-state carrier without modulation, and "C" is peak value of the modulating signal "D".

Fig. 4 actually shows the flux con-ditions in the modulation transformer

"B" is the level of steady-state flux due to the direct current supplying the r.f. carrier.

in the core when subjected to the modulating flux "D".
D" is, of course, the actual signal in terms of a.c. voltage.

The reason for the air gap in the core

The reason for the air gap in the core of a modulation transformer should now be quite clear. The point now arises—how do we calculate the required air gap? There are several ways to do this, but the easiest way, in the opinion of the writer, is to neglect the reluctance of the iron core itself and simply calor the iron core itself and simply cal-culate for the air gap alone. That is to say, we assume that the core requires no magnetising current, the air gap requiring the lot! This assumption is not as screwy as it sounds since the greater part of the total magnetising current of a transformer is required for the air gap. This leads to a very simple calculation for the air gap, viz.:— Air gap in inches

$$= \frac{0.71 \times A \times N}{B} \qquad (6$$

Legend: B = Flux density in lines per square

A = Amps. N = Secondary turns on transformer. 0.71 = A constant.

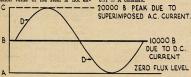


FIGURE 4.

ceeded. If we attempt to go beyond the saturation value, the excess signal input to the transformer primary does not appear on the secondary side.

Without going into the mathematics of the theory, it is sufficient to state that the initial direct current flux densiy in the core must not exceed 10,000 lines per square centimetre. Under this condition, the maximum flux density in the core with 100% modulation, does not exceed 20,000 lines per square

Fig. 4 shows a familiar curve. It is more familiarly known to Radio men as the "modulation envelope" where the "A" line represents zero carrier. * 28 Waters Road, Naremburn, N.S.W.

The above legend requires some qual-ification. The value "B" is the value of B max. as calculated from the usual transformer formula. (The effect of d.c. does not come into this calculation.)

The value "A" is the r.m.s. value of alternating current flowing when the flux density in the core is the above value of B (flux density).

Again, without going into the theory of why, it is sufficient to say that to obtain the conditions as shown in Fig. 4, the value of "B" must be 14,100 lines per square centimetre, and the value of "A" in r.m.s. amps. alternating cur-rent must be the same value as the direct current supplied to the trans-

BY V. J. McMILLAN,* VK2AWN

In our previously considered 60 voltament ransformer, let us assume that the control of the cont From (e), therefore, we find that the air gap under these conditions will be:—

0.71 × 0.1747 × 1640 = 0.0144 inches 14,100

The value obtained by this calcula-tion is only approximately correct, but it does show whether the air gap figure is practicable or impossible to attain. The actual air gap must be adjusted by testing the completed unit at a voltage, current and frequency corresponding to the values substituted in formula (e). Incidentally, it is most important that for the purpose of formula (e), the frequency assumed to determine the value of "B" is the lowest frequency it is desired to reproduce. (In our example we took 50 cycles as being the lowest frequency.)

ample we took 50 cycles as being the lowest frequency.)
We have yet to consider the required turns ratio of our modulation transformer. Let us assume that we wish to use a pair of 80% in AB2 to provide the necessary 60 watts of power. We require to know what dc. voltage and current they will need to provide this power. From these figures we can determine From these figures we can determine the turns ratio of our modulation

transformer. Power output calculations are some-what involved and require a knowledge of factors which are not readily avail-able to the average Amateur. However, the following formulae will give the required information with a reasonable degree of accuracy for class AB2 operation. The formulae do not apply to triodes. Power Output (W) = E × I × Efficiency

Transformer plate to centre tap voltage
(V) (in r.m.s. alternating current
value) =

I × 1.11 Plate to plate impedance (Zp) (in ohms) = (2V)2 (h)

Legend: E = Direct current applied voltage I = Direct current supplied to the

anodes. W = Power output in r.m.s. watts. 1.11 = A constant.

In our example we require 60 watts of output from the modulator. From published data on 807s in AB2

service, we know that the maximum anode(s) current is 0.24 amps. The efficiency we also know will vary from about 50% to 66%, depending on applied anode voltage and permissible distortion. From our knowledge of these facts and the use of formula (f), we find that an applied anode(s) voltage of 450 volts should be suitable, since:— From formula (e) 450 × 0.24 × 55.5% = 60 watts.

The plate to centre tap applied voltage will be:-From formula (g)

 $\frac{60}{0.24 \times 1.11} = 225$ volts (r.m.s., a.c.) The plate to plate impedance will

From formula (h)
[2(225)] = 3375 ohms

We do not actually require to know the plate to plate impedance, but the matter of interest.

As shown above, the plate to centre

tap voltage is 220 volts. Obviously the plate to plate voltage is twice this value, that is, 450 volts.

Referring back to our example, we said that the transformer was modulating a transmitter load of 600 volts and 0.1747 amps. Since we cannot exceed 100% modulation (without taking steps to avoid splatter), the peak a.c. voltage which we can apply to the carrier must not exceed the d.c. voltage. Since all transformer calculations are carried out on the basis of r.m.s. values, we must convert the peak value of voltage to a viz.:r.m.s. value. 600 × 0.707 = 424 volts r.m.s

This 424 volts is the actual voltage we require across the load, but as we have seen, we must make allowance for the internal resistance drop of the transformer (at low frequencies).

As was previously mentioned, the actual load is 3435 ohms plus an additional effective transformer resistance of 148 ohms. The total no-load secondary voltage must therefore be:- $\frac{424 \times (3435 + 148)}{424 \times (3435 + 148)} = 443 \text{ volts approx.}$

3435 We assumed that the secondary had

1640 turns on it, so that the total primary turns must be:— 1640 × 450(V) = 1668 approx.

443(V) A centre tap must be brought out at Most of the calculations are now com-

pleted for our modulation transformer. One thing you will note is that the start of all calculations springs from the known required output voltage and current. On these small transformers it is usually sufficient to base the required output on the actual load plus 10% (for transformer losses). The required primary turns is the last item to be calculated.

The only factor we have not yet con-

sidered is-how to predetermine the transformer leakage reactance.

TRANSFORMER LEAKAGE REACTANCE

There are many formulae used to predetermine transformer leakage reactance. Every transformer manufac-turer has his own pet theories on this subject. For our purpose we will only consider one which is applicable to our particular case, viz .:-%X =

A.T. \times M.T. \times (A + B + 3C) \times I S × 3 (A.L.) × V.T. × 50 × 1000 where:

A.T. = Total secondary ampere turns. M.T. = Mean length of leakage space

in inches. A = Effective depth of primary winding in inches. B = Effective depth of secondary

winding in inches Space between Space between primary and secondary in inches. C = Space

S = Number of winding sections.

A.L. = Winding length plus (A + B)

÷ 3 (approx.) in inches.

V.T. = Volts per turn. F = Frequency.

50 = A constant 1000 = A constant. This formula only applies to a trans-

former that has the primary and secwindings arranged concentriondary cally, i.e. one wound over the other.
We will consider, as an example, a
transformer rated at 5000 volt-amps. transformer rated at 5000 volt-amps. (5 kVA.) single phase, 50 cycles, with one primary and one secondary coil, and a voltage ratio of 240/480 volts. At 5000 volt-amps. rating the secondary (480 volt) current will be:—

 $\frac{5000}{100} = 10.42$ amps. (approx.)

The primary turns are 178 and the secondary turns 356. The coil dimen-sions, shown as a centre line section in Fig. 5 (all dimensions in inches) are:—

A = 0.36 inches

B = 0.84 inches

C = 0.33 inches



Assuming that the coils are wound on round cylinders, the value of "M.T." in formula (k) will be:— 5" × 3.14" = 15.7 inches approx.

The value for "A.L." in formula (k) will be:- $7" + \frac{0.36 + 0.84"}{1} = 7.4$ inches

The value for "A.T." in formula (k)

356 (turns) × 10.42 (amps.) = 3710 approx. The value for "V.T." in formula (k) will be:-

480 (volts) 356 (turns) = 1.35 approx. The value for "S" in formula (k) will be 1 in our example since there

is only one winding group. In general the number of winding groups can be taken as the number of separate spaces between primary and secondary coils. More of this later. We now have all the information

necessary to determine the percentage leakage reactance of this transformer at 50 cycles.

From formula (k):-

 $3710 \times 15.7 \times [0.36 + 0.84 + 3(0.33)] \times 50$ $1 \times 3(7.4) \times 1.35 \times 50 \times 1000$ 3710 × 15.7 × 2.19 × 50 $1 \times 22.2 \times 1.35 \times 50 \times 1000$

= 4.26% approximately.

Fig. 6 shows the same transformer except that the windings have been known as double concentric. In this arrangement one half of the primary winding is wound inside the secondary winding and the other half is wound outside the secondary winding. (Incidentally the terms primary and secondary in this sense can be changed over without affecting the operation in any way.)

This arrangement of windings reduces the leakage reactance to a remarkable degree. Formula (k) still applies, but the values change considerably, viz.:-A.T. remains the same.

M.T. now becomes the average of

M.T. now becomes the average of (5 × 3.14) and (7.34 × 3.14) = (15.7 + 23.1) + 2 = 19.4 inches. The values of A and B are now only one half of what they were before, that is, 0.18 and 0.42 respectively.

The value of S now becomes 2 be-cause there are two winding groups. The value of A.L. becomes slightly less, viz.: $7 + [(0.18 + 0.42) \div 3] = 7.20$ inches.

he value for A + B + 3C now becomes: 0.18 + 0.42 + 3(0.33) The value for A - 1 59

All other values remain the same so that we can substitute the values in formula (k) and obtain:- $\%X = \frac{3710 \times 19.4 \times 1.59 \times 50}{2 \times 21.6 \times 1.35 \times 50 \times 1000}$

= 1.96% approximately.

We can thus see that, in the particular example quoted, we have reduced the leakage reactance to something less than 50% of what it was originally. If the space between the primary and

secondary coils is small as compared with the winding depth, the reduction in leakage reactance is even more marked. Fig. 7 shows the same transformer

with the windings arranged double concentrically and, in addition, the windings are divided over two legs of the core.



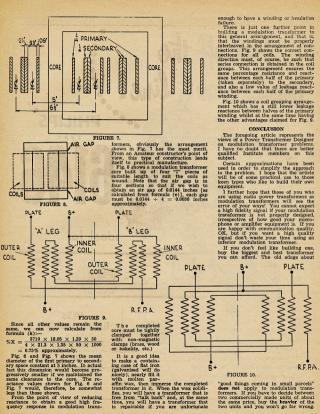
The values to insert in formula (k) now become:-M.T. is the average of (5 × 3.14)

and (6.5×3.14) , which is $(15.7 + 20.4) \div 2 = 18.05$ inches. The values of A and B as shown in Fig. 7 are 0.09 and 0.21 respectively.

The value of S now becomes 4 because there are four winding groups (or 4 spaces between primary and secondary coils).

The value for A.L. becomes: $7 + (0.09 + 0.21) \div 3 = 7.1$ inches. The value for (A + B + 3C now)becomes: 0.09 + 0.21 + 3(0.33) = 1.29

Amateur Radio, March, 1956





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PV6-54

Bandspreading the Super-Pro on all Bands

BY RON HENDERSON,* VK3ARV

ONE of the most computer receives ever to grace the Amateur's table trailar-made version of the Harmar-think overy Amateur and Swd. Is found think overy Amateur and Swd. Is found think overy Amateur and Swd. Is found think overy Amateur and Swd. Is good service if treated properly and operated correctly. With the conclusion operated correctly. With the conclusion control of the control of the

From a bare chassis the receiver was built up, coils wound, adjusted and finally calibrated. Many hours were spent at first enjoying the fruits of labour in listening to the new receiver, which looked like a first-class receiver at last to grace the shack table.

In those days we had the full span on the 7 Mc hand to listen to and somewhat crowded conditions of the Sunday morning dogplies of QRM made tuning rather critical, owing to the capacity on the control of the control

More alterations are not required, nor is the receiver taken apart for it is practically a wrecking job to remove the coil box from the chasses, not to probably frighten most of you into turning over this page. All that is plates over the bandspread tuning concenser as well as the main tuning concenser as well as the main tuning concenser as well as the main tuning contended tip on the soldering iron to reach the coil contacts.

First of all locate the small section of the bandgered gang that connects to the 15 to 30 Mc colls, remove this to 50 Mc colls, remove this preferably 16 gauge, across the top of the coll-contact finger board and solder conditions of the coll-contact finger board and solder conditions of the coll-contact finger board and solder conditions of the counter board in that stage. Feeding the wire across the board is not hard with long more piers. This connection. Repeat this operation on all stages—Rev. Mixer and Oscillator. With careful use of the soldering iron all stages—Rev. Mixer and Oscillator. With careful use of the soldering iron all stages—Rev. Mixer and Oscillator. With careful use of the soldering iron will result and you will find that this will not alter the range covered on the will result and you will find that this will not alter the range covered on the 25 Mc. board, nor the new band of 21 connection will also be satisfactory for the 4 Mc. board on the 10-20 Mc. colls.

Now remove the connection to the contact board of the 10-20 Mc. coils and repeat this operation on all stages as the coils and the coils of the larger gang and solder his lead to the eighty metre coil range, connection along one solder lug, now connect the 10-30 Mc. gang to the 5-10 Mc. coils on all stages and you will Before replacing the two small top Before replacing the two small top

Before replacing the two small top plates above the respective gangs, go over your connections and re-read this

article if necessary

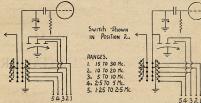
Planting the bandspread dial on minnium capacity, make a run over the frequency of your receiver with an accurate signal generator, Bendix frecurate signal generator, Bendix fretended from the second of the second partial or the receiver on the 15-30 Mc. Some slight touch up in calibration may be necessary on these two bands. If more than 500 Kc. out, something is still have room to move the trimmer on the high end of the band and the slug at the like and to put things in order proadcast or 7 Mc. band that is covered by this range of 5-10 Mc. range and with the bandspread dial still on a run over the range that is covered by these coils and check with your Signal Generator to see if the lead capacitance or inductance has made much different on the country of the control of the control of the control of the country of the c

can be touched up as before, and stugs can be touched up as before. On the 3.5 Mc. band the main tuning condenser is set to 3.96 Mc. and it is now a pleasure to work other stations with the generous bandspread. Almost 90 divisions is used to cover this band, whereas previously you had no band-

spread at all.

For those lucky chaps who work 7
Mc, phone DX, the main tuning condenser is set for 73 Mc, and you will now
elusive DX on this band. For the range
of the 150 Kc, allotted to us for this
band, 45 divisions will be available,
more than ample for the average and
certainly well worth the trouble.

OLD METHOD NEW METHOD



again, if not, you have extra lead capacitance. You will probably find it is the lead from the small section of the the lead from the small section of the the main gang, that is the culpirt. It should be spaced from the other wires the small section of the small section of the wires of the small section of the small section of the small section of the gang in parallel across the coll and although the small sections of the gang in parallel across the coll and although motived the small sections of the small section of the small s

We now have less capacitance across the coil. This will increase the coverage on the required band, whether it be the The writer will be pleased to answer any querier regarding this article if you can will be a supported by the property of the property bendy of the property of the prop

shows one stage altered as given in the instructions, the same connections will, of course, be carried out on all four stages in the Super-pro.

For those people who listen on the broadcast band, 1.25 to 2.5 Mc, the bandspread dial will have to be placed on the control of the same continuous careetimes for the

broadcast band, 1.25 to 2.5 Mc., the bandspread dial will have to be placed on zero or minimum capacitance for the calibrations to read correctly because there is approximately 10 pF. permenantly connected all the time.

• 18 Madden Grove, Burnley, E.1, Victoria.

Eighth Annual Urunga Convention

The Eighth Annual Urunga Conven-tion will be held over Easter Week-end, 30th March-2nd April, and the organisers are looking forward to your sup-port to make this the best Convention ever held at Urunga, or for that matter

at any place! V.h.f. enthusiasts will be interested in the two metre mobile and blindfold transmitter hunts, whilst the h.f. men can take part in the 40 metre battery-operated Gerry Challender Memorial Contest and the all-band scramble with phone from any place they can get it. Fishing enthusiasts and tall story tellers may even come up for prizes, too.

Accommodation is available at the Ocean View Hotel and several guest houses, whilst we can provide stretchers under shelter for those who wish to fend for themselves.

Accurate tariff figures are not available at the moment, but last year the

50 Mc WAS Cer. Add. Call VK2AEZ ... VK3XA ... VK3GM ... VK3ACL ... VK3ZD ... VK2HO ...

hotel was 35/6 per day, the guest houses 25/- per day with cheaper rates per week.

You are strongly recommended to book your accommodation now by writing to VK2AHH at Kempsey, stating type of accommodation, number of perparture, and enclose £1 deposit per

The area is served by train, whilst arrangements can be made to pick you up at Coffs Harbour if you elect to come by plane.

Our Sunday night concert is of the highest standard and the pleasure of meeting your old cobbers and making new friends are two further attractions to bring you to Urunga.

SO DON'T FORGET URUNGA. MARCH 30 TO APRIL 2.

-N. A. Hanson, Nth. Coast Zone Officer. _..._

BOOK REVIEW

"INTRODUCTION TO T.V. SERVICING" By H. L. Swaluw and J. v'd. Woerd

With the advent of t.v. in this country in the very near future, the addition to comprehensive volume on t.v. servicing is very welcome.

This book has been written especially for those radio servicemen who, having mentals, wish to prepare themselves for

Several chapters are devoted to the theoretical explanation of scanning, the operation of the picture tube and the wave form of the actual t.v. signal. Next comes a detailed description of a modern t.v. receiver, and to aid the dis-cussion the entire circuit diagram is included cluded. Such problems as antenna matching and r.f. amplifier design are fully covered.

A description of various types of portable test instruments is given, including a pattern generator and t.v. signal tracer

The final one hundred pages are devoted to a series of illustrations, showing the picture as it appears when the receiver is incorrectly adjusted, or some component part is faulty. Each is shown with firstly the test pattern from the t.v. station and then as it appears using a t.v. pattern generator as the signal

source. This book should be a very welcome addition to any Amateur or Serviceman's book shelf.

There are 264 pages, 6" x 81", cloth

Our copy by courtesy of Philips Electrical Industries (Aust.) Ptv. Ltd. Price in Australia is 40/-.



SPECIAL

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46 EASTGATE ST., OAKLEIGH, S.E.12

UM 3387

Further Notes on the Transmitter with Low Harmonic Output

BY H. F. RUCKERT.* VK2AOU

This series of articles have created some interest among members and the author would like to give further information in reply to the many ques-

tions received.

We have to start unfortunately with

We have to start, unfortunately, with the correction of a few errors:

(1) The four-range switch under the vfo. (October "A.R.", page 2) is used to switch the filaments of the multiplier stages off which are not in use. It actually would not matter if they were on all the time. The different resistors in the plate, screen and cathode circuits of these stages limit the current enough not to cause damage when the vf.o. is not delivering 1.f. The same

applies to the 807 driver.

(2) The five links, coupling to the tuned grid circuits of the driver 807, should not be connected to the coil ends of the grid tuned circuits. They are directly grounded. The tuned circuits are by-passed at their common cold end with a 0.01 uF, to ground. The 25,000 ohms grid leak resistor must not be shorted out (Oct. *A.R.*, page 3).

(3) The upper link of the 807 plate multiband circuit should be grounded in a similar way to the lower link. The centre lead must not be grounded.

V.F.O. NETTING

VK2AHH, being an excellent observer, caught the author by saying: "How can a shielded v.f.o. give a beat note in a receiver when the p.a. or doublers are not working?"

The answer: The transmitter is not as well shielded as a signal generator should be. The receiver is next to the should be. The receiver is next to the transmitter at the antenna relay and the stand-by relay, and uses also the same mains line. The v.f.o. gives only a SS signal in the receiver, whilst a grid dip meter gives S9 plus 40 db. (no aerial); the BC221 gives S9 (no aerial).

The second station receiver's first oscillator gives S9 plus 25 db., therefore the shielding of the transmitter is not so bad after all, and t.v.i. cannot be expected.

The three circuit band-filter at the grid of the driver was the best way to prevent long leads with high impedance and high ri, voltage going to the driver from the different multipliers. We also prevent, in this way, detuning of multi-switched on to different leads and valves with different capacities.

The two ranges of the v.fo. work like this: The whole 3.8 and 28 Mc hands action by shorting out the 25 pF. fixed capacitor and leaving open the contact to the 12 pF. capacitor. The narrow part of 3.5 and 28 Mc. can be spread over the dial by putting the 25 pF. fixed over the dial by putting the 25 pF. fixed some contact of the dial by putting the 25 pF. fixed seems of the contact of the contact of the dial by putting the 25 pF. fixed seems of the contact of the cont

ABSORPTION TYPE FREQUENCY

METER

Nov. "AR." page 3, 2nd column, 5th para: It was said that a sensitive absorption type frequency meter did not indicate any harmonics at the driver or p.a. stage. Unfortunately it remains to ediscussed what is a very sensitive frequency meter of this kind? An exmercial of the matter had the following result:

Thing two different industrial manufactured absorption type frequency meters (0.1 to 60 Mc and 20 to 220 Mc.) representations of the control of the control

What does this mean? If we have, for example, 800v. dc. at the plate of the pa., we may get 500v. rms. rf. at the tank circuit. If our absorption frequency meter reads full scale one inch away from the tank or antenna coupler circuit at any harmonic frequency, we know that we have about a few volts of harmonic energy in these circuits.

meter for aligning.

This is far too much for the international required harmonic suppression of 60 db. (1:1000).

It will not be easy to do much about this at the pa. tank or at earlier stages. We must prevent any direct radiation that the part of the

At the tank of the p.a. we can find very weak 14 Mc. harmonics up to the 15th at about 213 Mc. with this frequency meter.

CONSTRUCTION OF ABSORPTION FREQUENCY METER

A small 50 to 100 uA, meter is astisfactory. All components must be placed in a shielded box of 2" x 3" x 5" for example. Only one coil end is insultated and the coil is plugged in outside. A good Ge diode should be used. Valves are far less sensitive and not satisfactory without an amplifier. The coupling between the tuned circuit and the rectifier, Continued on Pace.

COIL TABLE FOR VK2AOU TRANSMITTER (see "A.R." for Oct. and Nov., '55)

Stages Mc.	Diam. inches	Length	Turns	Remarks
V.F.O. 1.75 Me.	1.38	1.9	80	On ceramic tube.
Driver Tank Multi-Band	1.38	1.1	10	4 turn link.
3.3 to 32 Mc.	1.38	2.24	23	6 turn link.
P.A. Grid Circuit Multi-Band	0.98	1.42	23	5 turn link.
3.3 to 32 Mc.	0.71	1.34	20	4 turn link.
P.A. Tank, Pi-Network 28 Mc.	1.38	1.77	5	inch diam. tubing.
One coil with { 14 Mc. tap for 21 Mc. 21 Mc.	2.3 2.3	1.54 0.79	6 21	‡ inch diam. tubing.
One coil with { 3.5 Mc. tap for 7 Mc. } 7 Mc.	2.77 2.77	3.16 1.78	15 8	inch diam. wire.
Antenna Coupler Multi-Band 3.5 to 30 Mc.	2.36	4.5	21	inch diam. wire. With taps for 'scope and feed ers at 2 to 8 turns. 2 + 2 turn link in the middle
3.5 to 30 Mc.	1.78	3.0	15	inch diam, wire.
R.F.C. at P.A. Tank	0.79	2.37	90	Not critical, close wound. Has no resonance holes be

Band Pass Colls: 13 mm. diam., 1 to 2 cm. long. (Short 6 mm. diam. slug for 14-28 Mc., long 10 mm. diam. slug for 3.5-7 Mc.).

Air Colls \$ inch diam. may be used and calculated from graph and formulae given in "A.R.", November, 1985, T.vi. Filter article. Use calibrated grip dip

* 25 Berrille Road, Beverly Hills, N.S.W.

ORP T/R Switching for 144 and 288 Mc. Antennae

BY PHIL WILLIAMS.* VK5ZAD

The method of switching, which is described here in its simplest form, lends itself to transmitters of the 10-20 watt class, such as the 522 on 2 mx or the push-pull 7193s on 1 metre. Most the push-pull 71938 on 1 metre. Most suitable relays for transmit/receive facilities are quite expensive, or intro-duce considerable impedance irregularity in the transmission line on either

The only apparatus needed in this method is a 4 x 2 oak switch (mine was obtained from an English I.F.F. set) and obtained from an English I.F.F. set) and two additional quarter wave sections of the transmission line you happen to be using. Two switch contacts are used to short these stubs while transmitting and open them while receiving, the third controls receiver h.t., and the fourth the transmitter h.t.



Fig. 1.-T/R switch shown in transmit position

It will be noticed that in Fig. 1, which is drawn for the transmit position, the line from the transmitter to the aerial is direct, and only has two shorted quaris direct, and only has two shorted quar-ter wave stubs connected to it at A and B. They do not adversely affect transmission. The balun to the receiver is shorted so that the leakage to the receiver is quite small, in fact it is less than the capacitive leakage from an

· 42 Harrow Road, Somerton Park, S.A.

open relay contact. It is advisable, nevertheless to include a grid leak in the first stage of the receiver to bias it off while transmitting.

On switching to the receive position (shown in Fig. 2), the switch at D allows signal from the antenna to pass along the stub BD to the receiver balun and co-axial cable to the receiver input tuned circuit (not shown). quarter wave sections BA and AC now form a half wave line having high im-pedance at B and C, with the trans-mitter connected to the low impedance mitter connected to the low impedance point at A. The transmitter impedance at A may be anything at all while the h.t. is not applied, and therefore con-necting it to the half wave line at A effectively isolates it from the receiver circuits so that it does not affect the matching.



Fig. 2 .- T/E switch shown in receive position.

No adjustments are required on the No adjustments are required on the T/R switch itself. Simply switch to transmit and adjust the coupling and tuning for the required output conditions, then switch to receive and adjust your receiver input for best results either max, signal or optimium noise

either max, signal or optimium noise figure if you're fussy.

Don't forget to apply the velocity cor-rection factor to the quarter wave line sections, and the half wave balun if you use one. On 144.5 Mc. a quarter wave-

length of open wire is 20 inches long 300 ohm ribbon is 167 inches long, an 300 ohm ribbon is 16‡ inches long, and polythylene co-axial cable is 13‡ inches long. The balun is, therefore, 27 inches long. You may simply halve these for 288 Mc. Measure the stub lengths from the switch contacts, not the st terminals—particularly at 288 Mc

This scheme may be used with co-axial cable throughout, in which case the balun is, obviously, not required and a quarter wave from the tapping point at B.

Somebody may like to adapt this method of switching to 5 or 10 metres, with lumped circuit elements replacing the quarter wave stubs.

TABLETOP TRANSMITTER

Next month VK2YY's transmit-ter will be featured. This consists of a Geloso v.f.o., 6146 (or 807) p.a., and 6L6 modulators. complete phone and c.w. transmitter (including power supplies) is built on one chassis. The article will be illustrated with photographs.

TRANSMITTER WITH LOW HARMONIC OUTPUT (Continued from Page 11)

etc., must not be too tight and 1 pF. bead type ceramic capacitor is recommended. The two r.f. chokes are wound on any 1 watt high ohm (100,000 ohms to megohm) carbon resistor serving as a former only, with about 30 to 40 turns.



The calibration can be done with a good g.d. meter and a calibrated re-ceiver for checking. The higher frequencies may be checked with a parallel wire Lecher system using the g.d. meter as rf. generator. By using an 8-50 pF air capacitor, the ranges 16-38, 36-92 and 85-235 Mc. can be covered. Coll Li has six turns, and is slug tuned. The others are wound to dimensions given.

ANTI T.V.I. FILTERS FOR THE AMATEUR TRANSMITTER

An error appeared in this article in Nov. "A.R." on page 10 at the top of column three. The factor "m" is always smaller than 1, therefore the notations to the formula should read. "m = values between 0.8 and 0.8 (often used). In our example m = 0.65."

On page 11, first column, tenth and eleventh lines should read: "and m near

THE LONG-AWAITED

LOG BOOK

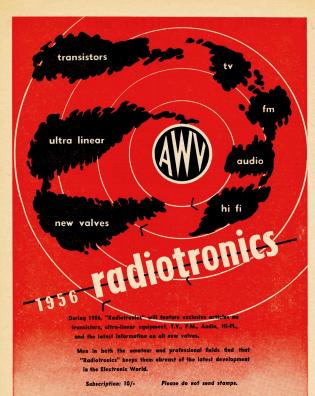
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Page 13

VC1a-56

A Mobile Transmitter and Antenna

BY R. S. FISHER,* VK3OM

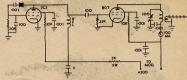
The transmitter and antenna to be described are used by the writer as comdescribed are used by the writer as com-panion pieces to the crystal controlled mobile converter previously outlined.¹ The combination has given excellent results over the last 12 months.

THE TRANSMITTER

THE TRANSMITTER.

The transmitter operates as a medium power crystal controlled unit on the 80, 40, and 20 metre bands. It features 15 watti input, ample plate as creeding the state of th trical system.

The r.f. section of the transmitter uses a 7C7 Pierce oscillator driving an 807 or 2E26 in the final. This gives plenty of drive for the final with plenty of drive for the final with either 40 or 80 metre crystals. For 20 metre operation it is necessary to double in the final amplifier. This does reduce the efficiency slightly, but as it simpli-fies the tuning considerably, it was considered worthwhile. Some adjustment of oscillator output can be had by



MORILE TRANSMITTER R.F. SECTION

The modulation transformer in the original transmitter consisted of two speaker transformers back to back. The speaker transformers back to back. The first a 10,000 ohms ct. to 23 ohms, the second 2.3 ohms to 5,000 ohms. Pro-viding medium sized transformers are used, this works very well. However, if it is possible to obtain a small modu-lation transformer, so much the better. The writer now uses an SCR522 modulation transformer.

gauge wire wound on a lead pencil. These are self supporting. The high tension chokes are ordinary 2.5 mH. r.f.

Two relays are needed to control the transmitter. One is connected in the main low voltage line from the battery. the second by the power supply to comes the transmitter control

Low voltage relays are easily obtained from motor accessory suppliers in the form of head lamp and horn relays. These will easily handle the current involved.

The best position to mount the transmitter depends on the type of car and the available space. Some positions worth considering are the luggage boot, under the dash, in the glove box, under the front seat (usually plenty of room here) and on the bulkhead.

The transmitter and power supply can be easily constructed on an 8 inch by 10 inch chassis. The writer has con-structed his in a medium-sized amplifier cabinet. This makes a neat unit that takes up little space.

MOBILE TRANSMITTER MODULATOR

either increasing or decreasing the value einer increasing or decreasing the Value of the ht. dropping resistor. The circuit specifies a 3,000 ohm resistor which should give about 3 milliamps. drive. The final is quite straight-forward in design. It uses plug-in coils to change to the various bands. With a 14 inch diameter former, which on 10 turns for 20 metres, 20 turns for 40 metres, and 35 turns for 80 metres. The plate tuning condenser can be an ordinary close spaced receiving type.

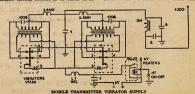
The modulator is designed to have

ample gain for any crystal or high impedance dynamic microphone. A 6SJ7 or 6AU6 preamp. drives a 6SL7 or 7F7 or EAUS preamp, drives a 6SL7 or TFT paraphase inverter, which in turn drives a pair of KT81 in Class AB1. These tubes were used in preference to 6V6s as they take less plate current. As it is they are slightly over biased and the pair draws about 60 milliamps. Some care should be used in the layout of the modulator to avoid of I. feed-back. This is especially important with the 6SJ7 Return all earth leads of this stage to a common point and then ex-periment for the best earthing position. *81 Neerim Road, Glenhuntly, S.E.9, Victoria.

The power supply uses two transformers and two vibrators. As shown in the circuit, they are wired as two separate supplies, and their input and output are connected in parallel. The transformers are rated at 300 volts 75 milliamps. These are standard items and easily obtained. The vibrators are 6 volt standard synchronous units. The low tension chokes consist of 15 turns of 18

THE ANTENNA

A mobile installation depends on its antenna. No matter how good the transantenna. No matter how good the trans-mitter may be, it will be useless unless the antenna is doing its job. This, of course, applies to all types of stations, but more particularly to the mobile station. As we must work under diffi-



cult conditions with a short antenna of relatively low efficiency, it is essential that we use every watt of power in the best possible way.

The design of the mobile antenna is often looked upon as being the most exacting part of putting together a complete mobile set-up. In actual fact, its construction is probably the easiest part of the whole thing.

DESIGN FACTORS

Let us start with a description of just how a short whip antenna works on the lower frequencies. Its operation is, of course, based on a quarter wavelength antenna working against ground, the ground in this case being the car body. On ten and fifteen metres this bands is eight and twelve feet; it is possible to feed a whip of this length with fifty ohn co-ax as it stands.



CUTTENT Flow Bottom & Center landed

As the frequency is lowered it becomes impractical to put an antenna of the required length on a car and if we continue to use our ten or fifteen metre whip a considerable amount of negative reactance to cancel this out, in the effore necessary to add enough positive reactance to cancel this out, in the required frequency. To do this a loading coil is added to the whip, and tuned until the facultance is under the negative country of the negative country of the negative country of the negative country of the negative consequence of the negative consequence

An important point is the placement of this inductance as it will effect the radiation resistance of the antenna to a great extent. With the loading coil at the base of the antenna, the radiation resistance will be approximately 4 ohms. With the coil in the centre, this is raised to about 10 ohms, and as a higher radiation resistance will give a higher radiation resistance will give to the preferred. Top loading will give even higher efficiency, but this may be mechanically difficult to achieve.

See Figs. 1 and 2 for the current distribution on a bottom and centre of the control of the cont

covered in the following paragraphs.

CONSTRUCTION DETAILS

Now for details of an 8-foot centre
loaded antenna for use on the 40 metre
loaded antenna for use on the 40 metre
loss. The centre coil former is constructed from a piece of tubular polystyrene 14 inches in diameter and about
shown in Fig. 3. Slose have been omitted as the diameter of disposals whips
seems to vary quite an apprecials

Next tap in the holding scrows. This

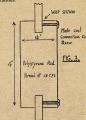
is best done by drilling a hole slightly under the size of the screw to be used. Then force the screw in, heating it every so often with a soldering iron. When this is done, the thread for the winding can be cut in. This job must be done on a lathe of course, and it is best to have the other holes drilled at the same time, to ensure that they

are all straight.

The coil is wound with 18 gauge tinned copper wire. About 52 turns at 18 turns per inch will be needed, the exact size must be determined by ex-

periment, with the following procedure.
Fix the whij in place on the car and connect to transmitter through a length of cable needed exceeds about six feet, it will be advisable to connect two co-ax is properly earthed at both ends. Couple the co-ax is properly earthed at both ends. Couple the co-ax to the final tank coil Turn the transmitter on and note the loading. This must be done with the possible.

Next, connect a length of stiff wire around the whip at the top of the coil and tapping it down a turn at a time until maximum loading is reached. Remove the number of turns shorted out and the job is done. To weatherproof the coil, give it one coat of clear enamel.



For 80 metres the procedure is similar except that approximately twoice the number of turns will be required on the coll. It would be possible to construct an antenna which would cover both 40 and 80 metres by arranging a tap on the coil for 40 metre operation.

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Victoria and (queensiant to enervictoria and (queensiant to enervictoria and (queensiant to enerperference) by established preperference) by established preperference of two-way hf. radio
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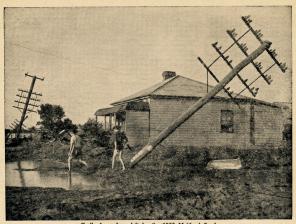


WATCH FOR 1956 KIT SETS

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Trail of wreckage left by the 1955 Maitland flood.

Aborigines were Wiser than the Whites

Aborigines were wiser than their white counterparts when it came to settlement in the Hunter River Valley district of New South Wales.

They kept to the surrounding hills — safe from the avalanche of water which they knew could bring sudden death and disaster.

Early in 1955, the worst flood in the history of the white man in Australia swept through the valley, causing privation and misery to thousands of people.

It also cut every form of communication. More than 10,000 subscribers' services and 400 trunk lines and telegraph channels were cut off and it was estimated that the repair bill would total more than £500,000.

Safeguard for The Future. It was a costly lesson, but today science has found a way to reduce this sort of flood damage to a minimum. A new resin* which permanently seals telephone terminal boxes in a solid waterproof block is being used by the Postmaster General's Depart-

ment on its services throughout Australia. SHELL scientists derived this resin from mineral oil to give communications the most effective waterproofing agent yet developed.

*Epikote Resin



DX ACTIVITY BY VK3AHH[†]

PROPAGATION REPORT

8.5 Me.: During the month, conditions were of as reliable as they used to be. However, ome DX can be reported. Times were for forth America: 1100-1300z; and for Europe: North America: 1100-2000, 1500-15002. 7 Mc: This band displayed the usual open-ings to all continents, although some deteriora-tings to all continents, although some deteriora-tinents and the Far East were represented between 6000 and 14002. Openings to Europe and Africa occurred around 1200-20002, and

and Africa occurred around 1000-000s, and III and III and III Mr. 18md conditions were reasonable to all continents. Nevertheless, openines appeared to the continent of the III and I

NEWS AND NOTES

Touring round this old globe, Danny VPYEB/P, has now been operating as FOSAN for some weeks, and expects to leave for VRI (British Phoenix) possibly on 18th March (from WSYY).

Doug VKIIJ did not waste much the with getting used to the somewhat cooler Criston actions on the 18 Mc. hand, this and VKINYE (FORTS to Action to the 18 Mc. hand, this and VKINYE (FORTS to Action). band. His and VK3YS efforts to estab-lish 50 Mc. contact between Macquarie Island and the mainland are highly commendable. Keep up the good work! VR3B and VR3C keep Fanning Island

on the Amateur Radio map after Ray

VR3A has left. (from W6YY).

It looks as if we are getting some competition from the 50 Mc. boys after all!! VK4NG worked JAIAHS on 50 Mc. Congrats! (Thanks 3YS for info.)

Another report on commercials on 7 Mc. has been received from 3AWS.

Mc. nas been received from 3AWs.
Thank you! like to work Italian Somalliand? ISAAW is active on 14165 Kc.
on e.w. (from WGYY).
Some VQ9 activity can be expected.
(from 3ATN).

The good old 80 mx band is in the news again! FASDA is looking for VKs between 1600 and 1800z on Saturdays and Sundays.

Another call sign has been issued for Macquarie Island: Dick VK1RD (from QTHs OF INTEREST

PZIBS—A. N. Soepenman, L. C. Soepenman, P. S. Strinam.
VPSAL—A. F. Lewis, C/o. Postmaster, Port Stalley, Falklands.
VS9AS—Box 1245, Aden.
KM6AX—Navy 3080, Box 19, F.P.O., San Francisco, U.S.A.
VS O. S. S. New York, U.S.A. HZIAB-A.P.O. 616, New York, U.S.A.

† Hans J. Albrecht, 10 Belgravia Ave., Box Hill North, E.12, Vic. * Call signs and prefixes worked.

ACTIVITIES

3.5 Me.: Frank 2QL heard G, OZ, DL, ON, followed by Fred 3YS who worked VK9XK*. 3AHH adds Ws.

17. Mag 91 heads the list with VGLLG. ETABLS and Europeans. The next in line is Laurie 2AMB with VSIBJ*, KL7AZS*, DUTSY*, VG4AQ* and JA*, Tim 3AZY adds VP* and VG4AQ* and JA*, Tim 3AZY adds VP* and AZY*, Excl. Excl.

worked JA*.

II Me. Gov. Dong III SKRIK. KA/JA*.

VSAGA FERZZ, CIRCI, STAIN, ZEZZ,

VSAGA FERZZ, CIRCI, STAIN, ZEZZ,

VZHAG, FERZZ, CIRCI, STAIN, ZEZZ,

VZHAG, LIBERTINES, HILLAN, III.

CV, YALAM, III.ETTINES, HILLAN, III.

HILLA, TIAL, GER, SAWM, VGAGA,

SERVINE, ZEZA, VZHAW, FURRE, FERZA,

SERVINE, ZEZA, VZHAW, FURRE, SEZZ,

VU, FYTYE, CERDZ, and COTAL

CONTY, NWAG, TORD, KERT, ZEZZ,

VU, FYTYE, CERDZ, and COTAL

RD, VVSB, ZEZY, VIBAK, Ken REE, YEARS,

RD, VVSB, ZEZY, VIBAK, Ken REE, YEARS,



"Please QRX a sec. OM! I think I can smell a resister burning."

"medl s restore humag."

A. YURDE, KRINE, Engressen, Sim STECERRE, CKMAR, FARIAL, FARIAL, LEEST,
CERRE, CKMAR, FARIAL, FARIAL, LEEST,
CORRES, CKMAR, FARIAL, FARIAL, LEEST,
CORRES, CROSS, CR

VQSCB. VSI. VS2, VS8, VU, VJIDL, YVSAE, ZSZBC, 3WSAA, 4S7MG, 4X4DK, Europeans Dave Jenkin: DN, 3WSAA, JA, CRSAE, KV4 VS2, 4S7NX, OA4J, PJZAA, 4S7BW, Europeans SAHH: VKIEK4*, FABDA*, Europeans*

VILLE TOTAL OF STANKA STORMAN OF STANKA STAN

CTAM, VQCCB, and Europeans.

Il Mc.; Bert SHE: ZBITD* and other Europeans*
AAUX*; Eu

27/28 Me.: Don 2RS spoke to Ws*. Les 4XJ contacted the following districts: W1*, W2*, w3*, W4*, W5*, W6*, W7*, and VE7AFA*. TLZ adds W9*. Dave Jenkin heard W6.

Rare QSLa were received by: 2AMB: VS4RC 3KR: VP7RI. 3ARV: VS5KU, CR7BN. 3ATN ZSSI. 5WO: CX2AX, CEPV. KP4ABD. ZDA BZ. TIZDLM, CS3AC, 4X4CK. 7LZ: HZ2ARR BERS198: PY1BFR. PY2VF, VK1DJ, VQ4AQ Red de Balfour: HK3PC. Thanks to W6YY and VKs 1IJ, 2QL, 2RS, 2AMB, 3HE, 3KR, 3TE, 3XB, 3YS, 3ZA, 3ADW, 3ARV, 3ATN, 3AWS, 3AZY, 4RW, 4SE, 4XJ, 5BY, 5HI, 5JO, 5QR, 5RK, 5KX, 5WO, 7LZ, 7PM, and s.w.l.'s, BERS195, Dave Jenkin (VK3) and Rod de Ballour (VK7).

IONOSPHERIC PREDICTIONS FOR AMATEUR BANDS, MARCH, 1956



SHORT WAVE LISTENERS' SECTION'

Well boys, I'm warning you that you'll have to spark yourselved up, or be shown up. That's part of the part of the spark of the part of the first only been littening on the Amsteur bands for a few months, but has already picked up most of the lingo, and as evidenced by the list of reports, quite a few stations too. We wel-come you to the S.w.L Group, Lola.

Greetings are extended to another S.w.l., Alan Holmes, who read about our Group in some copies of "A.R." loaned to him by a friend. Alan tells of his disappointment at not receiving a good percentage of returns to his reports. Well, cheer up Alan, we have all been through the same trouble at some time or other.

The animal results at some time or other.

It may be well worthwhite to hake a few controlled and the state of the state o

It is usually the station whose signal strength down who would like to know just where self signals are going. Most of the S9 signals Compiled by: Ian J. Hunt, WIA-L3007, 101 Robert Street, Northcote, Vic. may therefore be disregarded as far as sending reports are concerned. Of course, if it's a rare one you hear, send him a report by all means. One more don't. Do not send a report to a local station who is working DX unless you consider that you can really make the report useful.

VICTORIAN S.W.L. GROUP

viceful. VICTORIAN S.W.I. GROUP
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Tring in the day.

We hope to hear more of the exploits of Groups in other States. Come on you boys in VK2, VK4, VK5, VK5 and VK7. Let us hear a lot more from you.

REPORTS OF AMATEUR BANDS Ladies first, as always. YL S.w.l. Lola Bur on reports hearing the following stations i Mc.-WTKC, VR2CG, LXISI. 14 Mc.-HK3 V, YV3BD, VS2UW, OD5EY, HZ1TA, CESCO PPET WIBH WESEN WHICH CENTS, FIG.

S. FAYAC WIBE, LAPWID, AFRIBUN JO.

GD, WAGI, KAACI, EISY, WGIIZ, GSOGS,

WSBUC, WASHE, KAALZ, YQAAG, OHSE,

FPST, KAADH, KASBU, KAZLC, WGGIK,

FPST, KAADH, KASBU, KAZLC, WGGIK,

FPST, KAADH, KASBU, KAZLC, WGGIK,

FPST, KAADH, KASBU, TALA, DIABH, YSTID,

GWGCF, GMJ.

WIKALJEZE Made avalable a list of stations

WIKALJEZE MADE avage avalable a list of stations

4CP, G4MJ.

(IA-L3925 made available a list of station did not indicate the bands on which these

the standard mixed available a list of ratios between the mixed and mixed the bands on which the standard that had been standard to be standa

Clies: care used received from ZelisW and Olise: carels being held for members of the S.w.l. Group are from PYSBP, DLJNY, WFKT, WFZTD, and WBJT. Keep those reports coming in together with any other dope you may have Station descriptions, reports, or hints and knike you think someone else may be able to use, you correspondence to John Wilson, whose address is given above, or to lan J. Hunt, 161 Robert Street, Northeoise.

*********************** CHANGE OF ADDRESS

W.I.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur



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FIFTY-SIX MEGACYCLES AND ABOVE

V.h.f. DX has been excellent lately, On the 50 Mc. band openings have oc-curred to VK2 and VK4 from VK3. On 10/1/56 the VK52 and VK4 from VK3. On 10/1/56 the VK52 worked VK5 2, 3, 6 and 7. On 12/1/56 ZL2D5 broke through to VK3 for a short period. On 10/1/56 at 2010 hours ES.T., VK110 of Mac-tal 2010 hours ES.T., VK110 of Mac-diance of the VK4BT and SS. On 22/1/56 VK4BT. reports working JAI/AISS at VK4NG reports working JAIAHS at 1440 to 1447 hours E.S.T. The JA reported VK4NG at R5 S9 and he gave the JA R5 S8. VK4NG also heard JA1AEW.

Athal 3CP has Wall the a new converter using a 6EQTA as a neutralised pp. triode, 6AM4 grounded grid, triode 616 as mixer, with a cathded coupling in the output. The xtal is on and the plate circuit is tuned to the frust harmonic with a second 6AG6 trebling to 138 harmonic with a second 6AG6 trebling to 188 as working very well and Athol is happy with the results he has been obtaining.

the results he has been obtaining. The programs for the last Vick, meeting included two short loctureties, the first by Edd vickers, and the program of the last Vickers and the vickers and the last Vickers and the last

The v.h.f. meeting in April, to be held on Wednesday, 18th, will be the city-country gel-together and will be held at the rooms, 191 gueen Street.

Cognition, and will be had at the room, 100 VM. IZA has been excellent lately. On 14 Med. of the West lates, which was a second on the house the work of the West lates. They are not most right to be well as agreed. The West country is a group. They was the work of the West lates and the work of th

listens for 2WH from 2135 to 2140 hours. During the holiday week-end Laurie 3ALY, with Bob 3OJ and Len 3LN, went portable on right and the state of the state of the con-trol of the control of the control of the Warragul and the used the standard low fre-quency technique of giving a short break when great properties of the standard low fre-quency technique of giving a short break when left out of the car with amazement when 3DJ gave a short break acknowledging 3ALY's call. Then followed a 160 per cent. three-way contact between 5ds. Warragul and Portalington. If you're after a VK2 contact on the 144 Mc. band, keep a check on approx. 144.1 Mc. for 2RS at Albury, who calls each evening at 8 p.m. with the beam towards Melbourne. The bearing of Albury from Melbourne is approx. 40

6HK and 6ZAA operated mobile whilst on a holiday trip to Melbourne and were eagerly sought after by the VK3s for contacts and contest numbers.

Stations with gear for the 55-60 Mc. band include SXM 3AHL 3YJ, 3YS, 3CI, 30F, 3VL and 3US, who are located in Leongath, operate on 56.55 Mc. and are locating for contacts after about 8 p.m. each evening. It is very pleasing to hear the familiar voice of Max 3BQ on the air once again. Max is looking very well after his convalescence and is the friendly, congenial personality down at the low end of the based that we have all missed to much during the past two meeths. It is also year planting to here the long absent. It is also year planting to here the long absent. It is also here the long absent to the long absent to the long absent to the long absent to the long and t

SOUTH AUSTRALIA

Last month was a very busy one for the v.h.f. boys in this State; we were very pleased to meet in person and entertain (we hope) Don SHK and Wally 6ZAA from Perth. Don had mobile gear for 144 Mc. and together with mobiles SGL, SKC and SMT, much fun was had by all, as they say.

had by all, as they say.

From M. Lofty all the mobiles qSOed SEC
From M. Lofty all the mobiles qSOed SEC
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pany be of some help to any others who are
BER FOR. Wetter the series of the

perhaps inferested in going mobile. Reg 5GR with renewed vigour has erected a 16 el. phased array for 144 Mc. and is very pleased with the results so far. He has also constructed a xtal locked converter for 285 Mc. and with similar gear to be constructed by George 5GB. they hope to "shatter" the existing Australian one mx record; best of Juck

chapit

There has been Hitle settivity in the country. There has been Hitle settivity in the country that the setting of the s

Bob SPU has built a nice xtal converter for 288 Mc. and this, used in conjunction with a planned xial tx to be built by SMT, should be instrumental in extending the 288 Mc. record distance of 108 miles.—SMT.

WESTERN AUSTRALIA

The February meeting of the Disc. Group beard an interpretable of the Control of her, Ed.J., who is in Nettenti Service.

14. Mar. Norm of the month has been the
has been best of consistently at 901 hours in
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than those at 100 and 100 hours. It appears

Another item of interest was the copying of Don 6ftK's mobile tx 110w. to a halo) from outside Northam (50 miles) through hilly terrain. With a beam and higher power, what would signals from Northam be like? Tom 6ZAH in Brunswick intends joining in the V.h.f. Group's next fox hunt. Tom looks as though he will be in a nice net with 6XI in

Dardanup and 6ZAL in Bunbury. Checks be-tween 6ZAH and 6XI have been very success-ful with mod. osc. type gear. bream CAM and OXI have been very accesses. Also, promising well is the never that Pranches and the promising well is the never that Pranches and the promising well as the promising and the same of the promising and promising an approximately an analysis and promising an approximately appr

TASMANIA

TASMANIA

January has seen a lot of activity on 144 Mc.
In Launceston. VK2 stations have been worked
to the law of the la

Often the hardest part of working into VKS is getting someon to hear you. Some VK3s ure can nather. TLZ is all set for ulcers after the part of the pa

inversion being around.

The scoring system in the Ross Hull Contest does not take into account Interstate working on 144 Mc. as the Laumeeston gang can double their points for working a local three miles away, making 10 points for a first contect, while VKJ, 300 miles away, only rate 5 pts. while VK3, 300 miles away, only rate 5 pts. With the increased activity beams seem to be the main subject. YGM has put up a new five over five and TB2 and TLZ are going to try a five over five also, TLZ is changing beams of the control of the con

D.X.C.C. LISTING Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.



FEDERAL, QSL, and DIVISIONAL NOTES



Fed. President: W. T. S. Mitchell, VK3UM.
Fed. Secretary: L. D. Bowle, VK3DU, Box
2011W, G.P.O., Melbourne,
QSL Bureau: R. E. Jones, VK3RJ, 23 Landale
Street, Box Hill, Ell, Vic.
DX C.C. Manager: A. G. Weynton, VK3XU, 30
Park St., West Brunswick, N.10, Vic.

NEW SOUTH WALES

President: Im. Courth, VEYGO.

Bernaur, Barry Holds, VERACH, Box 1794,

Bernaur, Barry Holds, VERACH, Box 1794,

Berling Night Pouth Priday of each month at

Divisional stab-Editor. Ted Whiling, VEXACD,

Divisional stab-Editor. Ted Whiling, VEXACD,

Old, Bernaur J. B. Corbin, VEXCO, Box 1794,

Construction of the Control of the Contro

VICTORIA President: G. Dennis, VK3TF. Secretary: D. L. Robinson, VK3ALD. Administrative Secretary: Mrs. May, C.O.R. House, 191 Queen St. Melbourne. Meeting Night: First Wednesday of each month at the Radio School, Melb. Technical College. Divisional Sab-Editor: Phyl Moncur, 235 Union Road, Ascot Vale. QSL Bureau: Inwards and Outwards—W.LA., 191 Queen St. Melbourne, C.1. Vic.

191 Queen St., McBourne, C.1, Vic.
Zone Correspondents: Central Western: W. J.
Zone Correspondents: Central Western: W. J.
Western: W. Wines, 48 Cranley St., Warrnanbool, and W. Zimmer, VickAWZ. 79 Skene
VK3SD, "Boorcondal," Wahring, Far Nerth
Western: M. Folle, VK3GZ, 101 Lemon Ave.
Nicon St., Maffra: North Western: G. Cale,
Cumming Ave., Birchip.

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President: Frank Bond, VKZM.
Secretary: W. J. Rafter, VKMPR, Box 633,
Secretary: W. J. Rafter, VKMPR, Box 633,
C. D. Strick Box 633,
C. D. Strick Box 633,
C. D. Strick Box 633,
Strick City,
Strick Cit

SOUTH AUSTRALIA President: G. M. Bowen, VKSXU.
Secretary: B. W. Austin, VKSCA, Box 1234K,
G.P.O., Adelaide. Telephone: UX 2621.
Meeting Night: Second Tuesday of each month
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Divisional Sub-Editor: J. M. Coulter, VKSJD,
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Secretary: J. M. T. Troden, VKSFT.

Petth. W. A.

Petth. W. A.

Reding Flace: The Technical College Annexe,

Westing Night: Third Tuesday of the month

Meeting Night: Third Tuesday of the month

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QSL Bureau: Jim Rumble, VKSRU, Box F318,

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Hobart.
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Brent St., Glenorchy. Divasonat Sub-Editor: V. F. Dore, VK7JD, 21
Brent St., Glenorchy.

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John Chrystophy.

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VK7CA, 56 Trevallyn Rd., Launceton: North

Western: S. H. Pattison, VK7UW, 35 Mark

St., Burnle, Tas.

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PAPUA—NEW GUINEA

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Divisional Sub-Editor: W. Holland, VKSBW.
C/o. P.O. Box 76, Raboul.
SEL Bureau: D. H. Beadel, VKSDB, C/o. P.O.
Box 107, Port Moresby.

FEDERAL

INTERNATIONAL GEOPHYSICAL YEAR 1957-58

Federal Executive has been happy to receive from Professor H. C. Webster, of the Queens-and University, a letter in which it is suggested that Australian Amateurs may play an import-nit and interesting part in the scientific in-restigations of the International Geophysical Fear 1857-85.

Year 1897-98. Quoting from his letter, Professor Webster says: "One of the phenomena which is to be especially examined is the 'aurora polaris'. As you know, the aurora australis is sometimes seen in Tasmania, and the southern parts of continental Australia, and is regularly seen in the Australia, and the Australia.

The Germin of the Uses, have pointed out to me that Rad in meteur, operating in the 85-60 Mc. band can assist in the investigation of aurora by reporting evidence of freak regretations of the property of the state of the regretation of the property of the regretation of the regr

knowledge of the phenomenon."

The Professor goes on to say that he is most anxious to find out if any of our members would be willing and able to co-operate in such an enterprise. Federal Executive has replied to the Professor stating the matter will be put before members and they will supply him with the names of those interested.

In hames of those interested.

In the past, Amateurs in Australia have had but little opportunity to be included in scientification of the past of the

In order that organisation shall be on a Divisional basis, members are requested to send their names into their Divisional Headquarters at the earliest possible moment so that Pro-cessor Webster can be informed and plans pre-bared. This is a real opportunity.

DX CONDITIONS AND SUNSPOTS With the rapid improvement in DX conditions he following information, kindly made avail-ble by the Amateur Administration, is of great interest and augurs well for the next few years. The forthcoming Sunspot Maximum is likely to be Unusually Early and High

ratio werea, Ag to also well known, the approximate segme or a cycle is skell. I seem to see the comment of the comment of the comment of the comment of the comments of the c

this mission law.

"If the above extrapolations prove to be accurate we may expect the change to higher frequencies for long distance radio communications quenches for long distance radio communications to the contract of the contract of

T.V. TEST TRANSMISSIONS Those actions to the control of the

FEDERAL OSL BUREAU RAY JONES, VKSRJ, MANAGER

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FEDERAL AWARDS NEW COUNTRIES

The following additions have been made to the DXCC Countries List: Lees (XW8), Cam-bedia (3W8) and Viet Nam (FIS) and credits will be given starting 1/2/56 for confirmation of contacts made on or after 20th July, 1955.

Amateur Radio, March, 1956

W.A.V.K.C.A. AWARD Certificates have been issued to ON4AU, ZL2GX, VESAW, SMSCO, G2MI, W2QHH, and ZL2AFZ. A total of 26 certificates have been issued to 31/1/36.

G. Weynton, VK3XU, Awards Manager

VICTORIA

VICTORIA

The dist served was a long to the year was very poorly attended, in fast the worst attended with the served attended to the worst attended to the worst attended to the worst attended to the worst attended to the served at the served attended to the served at the half participated to the served at the served at

The following were velocited as new mem the following were velocited as new mem the following the fo

The next general meeting of the Institute, be held on Wednesday, 7th March, will be up postponed lecture on tw. which will be ven by Mr. Kempson, a member of the Melure Technical College staff, and will be used on the new tw. operators' commercial

80 METRE TRANSMITTER HUNT A good crowd attended the last 80 metre to hunt, which was held in perfect sunshine. The tr was hidden by Len 3LN at Campbell's Cove, which is in a very inaccessible position from the Melbourne direction. It is on the coast at the back of Point Cook R.A.A.F. station. Here 3LN found the utopian set-up where a

VICTORIAN DIV., W.I.A. SOUTH WESTERN ZONE

CONVENTION will be held at

WARRNAMBOOL

SAT. & SUN., MAR. 17 & 18

For accommodation, apply-N. J. WINES, 48 Crawley Street, Warrnambool, Vic.

Laurie 3ALY was first on the location but the location but the location but the location but the location with the location of the didden to He was well-beared by Roy 3ARY and Reg 3ZAD. The ammonics made the most of the beach an ammonic made the most of the beach and the location of th

BI-MONTHLY SCRAMBLE, DEC. RESULTS
The second Bi-Monthly Victorian Scramble
was held on 6th December, 1955. Although
a total of 36 stations participated, only eight
logs were received! The winner was JALY
with 19 points, all earned on 144 Me.

Section C: 3ALY 19, 3ADW 15, 3AKR 15, 3ZAQ 12, 3ADL 11, 3WI 8, 3OJ 7, 3ZD 5. Checking: 3HE and 3AHH.

Checking SHE and SARII.

The results of the February Stramble, held on 6th February, 1804, will be amounted in the 6th February, 1804, will be amounted in the 18th February, 1804, will be amounted in the 18th February, 1804, and 18th February, 18 SOUTH WESTERN ZONE

SOUTH WESTERN ZONE
The zone generally sounds to be very bury
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bands although there is not much to repet
now commenced a new job with Les ZIXX in
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Bill Whee is starting to det bury for the Coverwiew with all its of the Warrandson on the week-end, 17th and 18th March, so hope to see quite a lot of chaps turn up as it will accommodation must let Bill Wines know before 3rd March as it is hard to get booker fore 3rd March as it is hard to get booker or the week of the second property of the second property of the week of th

NORTH EASTERN ZONE

Unrestantist his little VI freesence in a too love for standard Annotate supplies. It is too love for the variety of the

EASTERN ZONE A welcome voice on the 80 mx hook-up was Bill 3WE who has not been heard for some time. Very pleased to hear the old sig again. Ron 3PR comes on regularly; has grid leak bias in now and a clamper tube; talking of

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ype 2505 S watts. For 2 or 8 ohms Secondary MELBOURNE & VIC.: J. H. Magrath & Co.

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Page 22

Amateur Radio, March, 1956

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GEELONG AMATEUR RADIO CLUB

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QUEENSLAND

QUEENSLAND
The first general meeting for 1987 was well fishered in meeting for 1987 was well effectively findly of the three conclude gave the fishered fight of the three conclude gave the conclusion of the con

hers who can attend please advise the Secretary not later than 10th March so that catering can be attended to. The subscription is 17/6 per head.

he attended to. The subscription in 17th per The financiar, year ends with March and authorizing a sea of the subscription are 32th of the members and 32th of the members and 32th of the subscription are 32th of the members and 32th of the subscription are 32th of the members and 32th of the subscription are 32th of the subscription of the subs

T.A.R.C. NOTES

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AAI re-built his broad-handed converter, usprocessing the processing the proces

SOUTH AUSTRALIA

Having had a spell from journalistic strice for the property of the property o

like to express thanks to all those who helped to make the picule such a good show. Pelices to the picule such a good show Pelices and the picule such a good show Pelices and the picule such as the picul

PRESIDENT'S, REPORT

Extracts from the President's Report are submitted for members' perusal. Membership—The membership in the 10ty-Membership—The membership in the 12tt 12th months with a gain principally in full members. The figures at present are: Full 220, Associate 138. Of the total of 358 there are 33 Gountry Members divided into 59 Full and 34 Asso-Members divided into 59 Full and 34 Asso-

months with a gain proteinty in full members, and in the control of the control o

charce of good quities content due to very conserve and till a list of good to improve the content and till a list of good to improve the till a content of the diploy we do to the till a content of the diploy we do to the last content of the diploy we do to the till a content of the diploy to the till a last content of the diploy to the till a last content of the diploy to the till a last content of the diploy to the till a last content of the diploy to the till a last we must then down the diploy to the last we must then down the diploy to the last we must then down the diploy to the last we must then down the diploy to the content of the diploy to the diploy to the last we must then diploy to the diploy to the last we must then diploy to the diploy to the last we must then diploy to the diploy to the last we must then diploy to the diploy to the last we must be the diploy to the last content to the diploy to the diploy to the last content to the diploy to the diploy to the last content to the diploy to the diploy to the last content to the diploy t

s to be made of technical topics which should invest amminst swr.—Mr. C. J. Othen (SON) found that he would have to relinquish the fiftee of operator early last year and since that fresident. Sometimes Council have wondered the Sunday morning broadcast to our can assure everybody that these broadcasts is considered to the council of the council of the can assure everybody that these broadcasts of the council of the council

outry members are fulfilling a real seek, but so bloods forward in the sheated of our distermination of the sheated of our disMagazine.—Fulfiering an appeal for technical
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cheme.

Silent Key.—It is with sorrow that I have to cord the passing of an oldtimer in Charlie cheel (5CR). He was a fine OM of Amateur

record the posting of an obstitute of an abstract product of the facility of the CRIST of the CR

WESTERN AUSTRALIA The January meeting of the Division was held in the Tech. School Annexe. The names of the Divisional representatives on the Advis-ory Council were released for publication and are as follows: 6AW, 6OR, 6ZAA, 6MK, 6NF

out Dave Southern Transmission of the Management of the Management

TASMANIA

TASMANIA

The general meeting for February was held the clear and Secretary Bill Tail in attendance. As the clear and Secretary Bill Tail in attendance, the clear and Secretary Bill Tail in attendance, the clear and Secretary Bill Tail in attendance, the clear and the secretary Bill Tail in attendance, the clear and the cl

Organisation is in the capable hands of Reorganisation in the capable hands of Refor a really good tourgion. Planty This Sition and the state of the state

PAPUA-NEW GUINEA

APAPUA—NEW GUNEA

A property of the control of the

direction, serving some some of the first way we welcome two new members in 8A3 at We welcome two new members in 8A3 at the serving some serving serv As your scribe is holding the fort until a new sub-editor for local notes is duly elected for this year, I would welcome anything of interest for inclusion in these notes.—9RM.

HAMADS

1/- per line, minimum 3/-.

Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own perdet to the state of the month, and remittance must accompany advertisement. Calculation of cost is based on an average of six words a line. Dealer's advertisements not accepted in this column.

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